UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/608,307	06/30/2000	Satyendra Yadav	10559/228001/P8793	9835

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FISH & RICHARDSON, PC
12390 EL CAMINO REAL
SAN DIEGO, CA 92130-2081

EXAMINER
PHAN, MAN U

ART UNIT	PAPER NUMBER
2665	4

DATE MAILED: 12/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. 09/608,307	Applicant(s) Yadav et al.	
	Examiner Man Phan	Art Unit 2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ___3___ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Jun 30, 2000*

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-30* _____ is/are pending in the application.

    4a) Of the above, claim(s) _____ is/are withdrawn from consideratio

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-30* _____ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examine

    If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some* c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    *See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

    a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

4) ☐ Interview Summary (PTO-413) Paper No(s). _____

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____

U. S. Patent and Trademark Office

PTO-326 (Rev. 04-01)   Office Action Summary   Part of Paper No. 4

DETAILED ACTION

1.   The application of Yadav et al. for the "Packet processing in a router architecture"

filed 06/30/2000 has been examined. Claims 1-30 are pending in the application.

Drawings

2.   This application has been filed with informal drawings which are acceptable for

examination purposes only. Formal drawings will be required when the application is

allowed.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
>
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
>
> the prior art are such that the subject matter as a whole would have been obvious at the time the
>
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
>
> Patentability shall not be negatived by the manner in which the invention was made.

4.   This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the

various claims was commonly owned at the time any inventions covered therein were

made absent any evidence to the contrary. Applicant is advised of the obligation under 37

CFR 1.56 to point out the inventor and invention dates of each claim that was not

commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

5.   Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Noriyuki (US#6,510,159) in view of Lowry et al. (US#5,970,066).

        With respect to claims 1-18, both Noriyuki (US#6,510,159) and Lowry et al.

(US#5,970,066) disclose a novel routing system for packet processing utilizing virtual

interface according to the essential features of the claims. Noriyuki provides a router

architecture that executes a high-rate packet transfer process with an address table while a

virtual interface is being used (See Fig. 1; Col. 1, lines 51 plus). Noriyuki discloses in

Fig. 2 a flow chart illustrated a function process flow of the routing processing unit 7 in

the router, in which the records entered in address table (72) are comprised of a

destination address and an address of the next hop in the network layer, each being a

search key thereof, (*a destination address of a network layer when a packet can be

directly transmitted*), and an aging timer for aging packet transfer information and table

entries. When packets are transmitted to the LAN interface, the table stores the header of

a data link layer and a transmitted destination interface. When packets are transmitted to

an ATM interface, the table stores call information *(VPI (Virtual Path Identifier)/VCI

(Virtual Channel identifier))* to be transmitted (Col. 3, lines 38 plus). Furthermore,

Noriyuki's router has an address table on which a set of a destination address of a

network layer, an address of a next hop on a packet relay route, and packet transmission

information is stored, retrieved, and removed as one entry. The address table stores as

transmission information of a packet a destination address of a network layer and an

address of a next hop at a packet transfer time, a header of a data link layer and a

transmitted interface when a packet is transmitted to a LAN interface, and call

information (Virtual Interface) at an ATM when a packet is transmitted to an ATM

interface. Packets are directly transmitted to a physical interface using the address table

storing the packet transmitted from each interface, without executing a routing process

(See Fig. 2 and the Abstract).

In the same field of endeavor, Lowry et al. (US#5,970,066) provides for a Virtual

Ethernet Interface for interconnecting a first computer at a customer premise and an

Ethernet LAN at a central office. Lowry discloses in Fig. 1 illustrated a virtual Ethernet

interface comprises a virtual interface card connected to the first computer and a physical

interface card connected to a second computer that is in communication with the Ethernet

hub. On start up, the central office computer sends the MAC address associated with the

Ethernet interface of the physical interface card back to the virtual interface card of the

first computer. Thus, the virtual Ethernet interface allows the first computer to form

Ethernet frames using the MAC address of the physical interface card so that it appear as

though they were originated from the second computer. Further, the first computer can

receive frames taken from the Ethernet LAN by the physical interface card and

transmitted to the virtual interface card over the DSL link (Col. 2; lines 38 plus).

Regarding claims 19-24, they are method claims corresponding to the apparatus

claims 1-18 above. Therefore, claims 19-24 are analyzed and rejected as previously discussed with respect to claims 1-18.

With respect to claims 25-30, These claims differ from claims Noriyuki in view of Lowry in that the claims recited a computer program product for performing the same basis of steps and apparatus of the prior arts as discussed in the rejection of claims 1-24. It would have been obvious to a person of ordinary skill in the art to implement a computer program product in Noriyuki in view of Lowry for performing the steps and apparatus as recited in the claims with the motivation being to provide the efficient enhancement to packet processing in a router architecture, and easy to maintenance, upgrade.

One skilled in the art would have recognized the need for effectively and efficiently processing packet utilizing virtual interfaces, and would have applied Lowry's teaching of the virtual Ethernet interface for interconnecting into Noriyuki's novel use of the routing processing unit in the router architecture. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Lowry's virtual Ethernet interface into Noriyuki's router and routing method with the motivation being to provide a method and system for packet processing in a router using virtual interface.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Harvey (US#6,330,599) is cited to show the virtual interfaces with dynamic binding.

The Bales et al. (US#5,185,742) is cited to show the transparent signaling for remote terminals.

The Dynarski et al. (US#6,272,129) is cited to show the dynamic allocation of wireless mobile nodes over an IP network.

The Skirmont et al. (US#6,553,005) is cited to show the method and apparatus for load apportionment among physical interfaces in data routers.

The Futral et al. (US#6,044,415) is cited to show the system for transferring I/O data between an I/O device and an application program's memory in accordance with a request directly over a virtual connection.

The Novaes (US#6,507,863) is cited to show the dynamic multicast routing facility for a distributed computing environment.

The Hughes et al. (US#6,434,612) is cited to show the connection control interface for ATM switches.

The Shah et al. (US#6,460,080) is cited to show the credit based flow control scheme over virtual interface architecture for system area networks.

7.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (703)305-1029. The examiner can normally be reached on Mon - Fri from 6:30 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Huy Vu, can be reached on (703) 308-6602. The fax phone number for the

organization where this application or proceeding is assigned is (703)305-3988.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (703) 305-

3900.

8.   **Any response to this action should be mailed to:**

           Commissioner of Patents and Trademarks

           Washington, D.C. 20231

or faxed to: (703) 305-9051, (for formal communications intended for entry)

Or: (703) 305-3988 (for informal or draft communications, please label

"PROPOSED" or "DRAFT")

           Hand-delivered responses should be brought to Crystal Park II, 2021

           Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Mphan

12/04/2003.